

**PHOTOMASKS INCLUDING SHADOWING ELEMENTS
THEREIN AND RELATED METHODS AND SYSTEMS**

Abstract

[0061] A photomask for patterning an integrated circuit device using a patterning radiation may include a transparent substrate, a pattern of radiation blocking regions, an array of radiation blocking regions, and an array of shadowing elements. The transparent substrate may have first and second opposing surfaces, and the pattern of radiation blocking regions may be on at least one of the first and/or second surfaces of the transparent substrate. Moreover, the pattern of radiation blocking regions may define a pattern to be transferred to the integrated circuit substrate. The array of shadowing elements may be provided within the transparent substrate between the first and second opposing surfaces wherein a shadowing element of the array has a light transmittance characteristic different than that of an adjacent portion of the transparent substrate. Moreover, a transmittance of the patterning radiation through a portion of the transparent substrate including the array of shadowing elements may be greater than approximately 20%. Related methods and systems are also discussed.